

THE DEVELOPMENT OF RUSSIAN ENTOMOLOGY*

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During the last few years there has been a rapid development of Russian entomology both along theoretical and applied lines. Theoretical entomology is concerned mainly with a systematic study of the Russian fauna. The universities are largely concerned with this type of work although recently this field has been expanded by the establishment of local museums of natural history in the different districts of the country. The entomological divisions of these museums are engaged chiefly in systematic, faunistic, and ecological research. The increasing number of organizations of young naturalists has also advanced our knowledge of the Russian insect fauna. In addition to the above mentioned agencies, the Zoological Museum of the Russian Academy of Science is conducting systematic and faunistic studies of insects. Besides the instruction given by the different colleges and universities in entomology there is the newly established Institute of Entomophytopathological Education (*Iziph*) in Leningrad.

The work in applied entomology is directed by special bureaus of plant protection located in the several republics in which Russia is now divided. They are called *O.Z.R.A.*—the first letters of the Russian words “Bureau of Plant Protection.” These bureaus are the centers of administration for applied entomology, phytopathology and the control of injurious rodents. In the different districts we have *stazra*—stations for plant protection. They are of the same general character as the entomological field stations in the United States, but have charge of the control of injurious insects, fungi, and rodents. The work falls in three main classes: 1. Control, 2. Research, 3. Extension.

Many of the Russian agricultural experiment stations have separate entomological divisions which conduct work only in applied entomology. At the present time the entomologists of the

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experiment stations are doing considerable work in determining the importance of injurious insects to different crops, and in the solution of these large scale problems statistical methods are used. The entomological work of the experiment stations is directed by the Government Institute of Experimental Agriculture. This Institute is reorganized from a scientific committee which before the war and revolution published many papers on applied entomology. The rapid development in Russia along applied lines has given rise to several new organizations for insect control. Some years ago a special entomological division was established by the Sugar Trust; last summer another was founded for forest entomology and a few days ago I received information to the effect that a very large division has been established for the control of cotton insects.

The work in medical and veterinary entomology is not so well developed. There are only four tropical research institutions which are studying insect borne diseases of man. There are very few stations concerned with the relation of mosquitoes to malaria. At the present time we have no special organization for veterinary entomology and there are relatively few investigations on this subject. These questions are of great importance and I hope that they will be developed in the future. Recent observations have convinced me that the effect of insects on domestic animals has a great influence on the lives of many people in Russia. In northern Turkestan there is a semi-arid country called Kazastan. Extensive areas in this country are below sea-level and the rivers form large inundated regions. Grass (*Fragmites communis*) grows in abundance in these marshes forming breeding places for locusts (*Locusta migratoria*) which occur here in very great numbers. This interferes with the production of cereals on the adjacent uplands as the first sowing is very apt to be eaten by locusts which migrate from these inundated areas. The people, therefore, have developed this as a grazing county rather than a farming region. During the summer the surrounding county is not habitable because of the large number of mosquitoes and flies that swarm from these extensive marsh areas. The inhabitants are forced to abandon their homes and hunt suitable pastures for their cattle in the mountains. The depredations of

insects, therefore, forces these people to abandon fixed agricultural pursuits and become nomads.

I wish to briefly relate the work of the Central Laboratory for Research on Fungicides and Insecticides which was established in Moscow in 1922. One of the difficulties in the control of locusts in southern and eastern Russia is that the area in which they breed is swampy. This makes airplane dusting the only plausible means of control, but before the effectiveness of the method could be established it was necessary to conduct large scale airplane dusting experiments. Favorable results were obtained by airplane dusting, using sodium arsenite and calcium arsenite. It required very small amounts of arsenic to kill the insects—about 2 kilos¹ per hectare.² Chemical analyses and biological tests showed that the width of the arsenical dust-cloud was about 100 meters³ and that dusting could be done at the rate of a hectare in three seconds. During three years about 50,000 hectares⁴ were dusted by airplane, without a single accident.

At the same time that this work was in progress the action of different arsenical compounds upon the locust was being investigated. Among the different compounds of arsenic we selected calcium arsenite as being very toxic and cheap. The question of arsenical injury to plants was not involved but this work suggested the possibility of using these compounds for dusting and spraying cultivated plants.

The economic importance of this problem induced me to undertake some work in the United States and at the present time I have an opportunity to study some of its chemical phases at the Boyce Thompson Institute for Plant Research, Inc.

Since Russia stands second only to the United States in applied entomology an exchange of publications would be helpful to the workers of both countries. Owing to linguistic differences and the lack of communication that has arisen since the war this contact has not been maintained. It would afford me great pleasure to assist American entomologists in obtaining Russian publications in exchange for American.

¹ A kilo is equivalent to 2.2046 avoirdupois pounds.

² A hectare is equivalent to 2.471 acres.

³ A meter is equivalent to 3.280 feet.

⁴ Equivalent to approximately 125,000 acres.